**AMENDMENTS TO THE SPECIFICATION:**

Please amend the specification as follows:

Page 4, replace the paragraph beginning on line 17 with the following amended paragraph:

To attain the above-mentioned objectives, the information recognition device ~~according to claim 1~~ of the present invention includes:

Page 6-1, replace the paragraph beginning on line 19 with the following amended paragraph:

The invention ~~according to claim 2~~ is also based on the information recognition device described ~~in claim 1~~ above, wherein the behavior pattern model storage means stores plural behavior pattern models depending on respective types of behavior patterns.

Page 6-2, replace the paragraph beginning on line 1 through page 7, line 4 with the following amended paragraph:

The invention ~~according to claim 3~~ is also based on the information recognition device described ~~in claim 1 or 2~~ above, and includes behavior pattern model generation means for generating the behavior pattern model of the object-to-be-detected based on the output of the thermal radiation sensor by using the predetermined modeling method.

Page 7, replace the paragraph beginning on line 14 with the following amended paragraph:

The invention ~~according to claim 4~~ is also based on the information recognition device described ~~in one of claim 1 to 3~~ above, and the thermal radiation sensor is a thermo-sensor.

Page 7, replace the paragraph beginning on line 23 with the following amended paragraph:

The invention ~~according to claim 5~~ is also based on the information recognition device described ~~in one of claims 1 to 3~~ above, and the thermal radiation sensor is a quantum sensor.

Page 8, replace the paragraph beginning on line 5 with the following amended paragraph:

The invention ~~according to claim 6~~ is also based on the information recognition device described ~~in claim 4~~ above, and the thermo-sensor is a pyroelectric infrared sensor for detecting infrared emitted from the object-to-be-detected using a pyroelectric effect.

Page 8, replace the paragraph beginning on line 13 with the following amended paragraph:

The invention ~~according to claim 7~~ is also based on the information recognition device described ~~in one of claims 1 to 6~~ above, and the predetermined modeling method is an HMM (Hidden Markov Model).

Page 11, replace the paragraph beginning on line 1 with the following amended paragraph:

The invention ~~according to claim 11~~ is also based on the information recognition device described ~~in any of claims 1 to 7~~ above, and the feature data includes first feature data constituted by a spectrum in a frame unit of a detection result of the thermal radiation detection means and second feature data constituted by an average amplitude value of the spectrum in the frame unit.

Page 11, replace the paragraph beginning on line 17 through page 12, line 2 with the following amended paragraph:

The invention ~~according to claim 12~~ is also based on the information recognition device described ~~in claim 11~~ above, and the first feature data is obtained by transforming a value of the spectrum in the frame unit into a value of a common logarithm.

Page 12, replace the paragraph beginning on line 10 with the following amended paragraph:

The invention ~~according to claim 13~~ is also based on the information recognition device described ~~in claim 11 or 12~~ above, and the feature data further includes third feature data constituted by a difference between feature indicated by the first feature data of a selected frame and feature indicated by the first feature data of the frame immediately before the selected frame.

Page 12, replace the paragraph beginning on line 25 through page 13, line 3 with the following amended paragraph:

The invention ~~according to claim 14~~ is also based on the information recognition device described ~~in claim 13~~ above, and the feature data further includes fourth feature data constituted by a difference between feature indicated by the second feature data of a selected frame and feature indicated by the second feature data of the frame immediately before the selected frame.

Page 13, replace the paragraph beginning on line 12 with the following amended paragraph:

~~The invention according to claim 15 is based on the information recognition device described in any of claims 1 to 7 and claims 11 to 14.~~ When the behavior pattern model is constituted by the feature data of a high dimension of four or more, the device includes:

Page 14-1, replace the paragraph beginning on line 6 with the following amended paragraph:

The present invention can be realized by an information recognition device, etc. described ~~in claim 1~~ above. Since the effects of the invention are the same as those described above, the explanation is omitted here.

Page 15, replace the paragraphs beginning on line 26 through page 15-1, line 5 with the following amended paragraphs:

The present invention is a program that can be applied to the information recognition device described ~~in claim 1~~ above. Since the effects of the invention are the same as those described above, the explanation is omitted here.

To attain the above-mentioned objective, the alarm system ~~described in claim 18~~ includes the information recognition ~~device~~ devices described ~~in any of claims 1 to 7 and claims 11 to 15~~ above;

Page 21, replace the paragraph beginning on line 17 with the following amended paragraph:

In this style of embodiment, plural objects-to-be-detected (persons in this style of embodiment) are asked to take the above-mentioned eight behavior patterns in advance (for example, each person takes each pattern five times), a detection result from the pyroelectric infrared sensor 10a obtained from the acts of the behavior patterns

is signal-processed by the signal processor l0b, the feature data is calculated, and the behavior pattern model generation unit [[12]]11 models the feature data corresponding to each behavior pattern by the HMM.

Page 30, replace the paragraph beginning on line 20 with the following amended paragraph:

That is, in the above-mentioned style of embodiment, five pieces of data are used for each attribute in generating a behavior pattern model in each direction, thereby generating the HMM dedicated to each object-to-be-detected. However, in the present embodiment, using all data of 17 persons in each direction, the HMM corresponding to the behavior in each direction of ~~the objects-to-be-detected of an indefinite number~~ unspecified person is generated.

Page 43, replace the paragraph beginning on line 3 with the following amended paragraph:

The two-dimensional projection unit has the function of calculating the mathematical distance between the ~~first~~ feature data A and the mathematical distance between the ~~first~~ feature data A and the ~~second~~ feature data B based on the feature data (hereinafter referred to as the ~~first~~ feature data A) at the time of generating a behavior pattern model and the feature data (hereinafter referred to as the ~~second~~ feature data B) acquired from the infrared detection unit 10. Furthermore, it has the function of projecting the multidimensional feature data according to the two-dimensional coordinate information based on the calculated mathematical distance with the relationship between the calculated mathematical distance maintained.

Page 44, replace the paragraphs beginning on line 1 through page 45, line 16 with the following amended paragraphs:

A practical operation is explained by referring to Figure 13. Figure 13 shows a display example of the feature data expressed in the two-dimensional projection. In this example, the ~~first~~ feature data A is obtained as a result of five-time processes on the behavior patterns (1) to (8) described above for each of the persons A to Q in the first style of embodiment. Therefore, five pieces of feature data (coordinate point of the same shape shown in Figure 13) is displayed in the two-dimensional projection for each of the persons A to Q on one behavior pattern.

The two-dimensional projection unit first calculates (for each process) the mathematical distance between the ~~first~~ feature data A for the behavior pattern of five processes on the persons A to Q, and stores the result in the data storage unit not shown in the attached drawings.

Upon receipt of the signal processing result (~~second~~ feature data B) from the infrared detection unit 10, the mathematical distance between the ~~second~~ feature data B and the ~~first~~ feature data A is calculated based on the feature data and the feature data about the five processes of the persons A to Q. Then, the mathematical distance between the ~~first~~ feature data A for A to Q stored in the data storage unit is read, and using the read data and the Sammons method on the mathematical distance between the ~~first~~ feature data A and the ~~second~~ feature data B to two-dimensionally project each piece of feature data with correlation of the mathematical distances maintained. The coordinate information generated in the two-dimensional projection is input to the information display unit.

The information display unit displays the acquired coordinate information using a coordinates point of a different shape for each attribute as shown in Figure 13. In Figure 13, coordinates 40 indicate the ~~second~~ feature data B, and a frame 41 in Figure 13 shows the relationship between the shape of the respective coordinate points and A to Q. As shown in Figure 13, the ~~second~~ feature data B (star-shaped coordinate point) is displayed in the position closest to the black diamond shape of A. Therefore, the display contents of the coordinate pointing the two dimensional projection show that the detection result is closest to the attribute A. That is, an operator, etc, sees the displayed contents of a coordinate point to recognize or predict the attribute (A in this case) of an object that has traversed the detection range 20.

Page 46, replace the paragraph beginning on line 11 with the following amended paragraph:

When control is passed to step S402, then feature data is read from the behavior pattern model storage unit 12, and control is passed to step S404. That is, the behavior pattern model storage unit 12 stores the ~~first~~ feature data A.

Page 47, replace the paragraph beginning on line 1 with the following amended paragraph:

On the other hand, when control is passed to step S410 without acquiring a signal processing result in step S400, it is determined whether or not the ~~first~~ feature data A has been acquired. If it is determined that the data has been acquired (YES), control is passed to step S412. Otherwise (NO), control is passed to step S400.

Page 49, replace the paragraph beginning on line 1 with the following amended paragraph:

The recognition unit 13 has the function of recognizing the behavior pattern information and the attribute information about an object-to-be-detected-existing in the detection range of the pyroelectric infrared sensor l0a based on the storage contents of the behavior pattern model storage unit 12 and the feature data of the infrared detection result acquired from the infrared detection unit 10, and the function of transmitting the recognition result to the alarm notification control unit **[[**20**]]**50. In this style of embodiment, the feature data is compared with the behavior pattern model stored in the behavior pattern model storage unit 12 to recognize the object to-be-detected to be a person or another object.

Page 51, replace the paragraph beginning on line 10 through page 52, line 4 with the following amended paragraph:

The alarm system 2 uses the information recognition device 1 to recognize an invader (object-to-be-detected) into a building as a person or an object other than a person by mounting the pyroelectric infrared sensor l0a provided for the information recognition device 1 near the entrance (a spot that is necessarily passed when a person enters the building) of a building such as a museum, a jewelry shop, etc. Based on the recognition result, the alarm notification control unit 50 determines whether or not the object-to-be-detected is a person. If it is determined that the object-to-be-detected is a person, the alarm unit 51 issues an alarm, and the notification unit 52 notifies a system user of the alarm contents. Therefore, when a "person" such as a burglar, etc. invades a building, it is recognized as a person, and a threat or an alarm can be issued by an alarm of an alarm unit **[[**21**]]**51, and the notification unit 52 notifies a system user of the invasion of the "person" into the building, thereby for example allowing a guard as a

system user to rush to the spot and catch the burglar, or contacting the police to ask a policeman to rush to the spot, etc. On the other hand, when a "non-person" such as a dog, a cat, etc. invades a building, it can be regarded as a non-person, and a wasteful alarm or notification can be avoided.

Page 55, replace the paragraphs beginning on line 8 through page 59, line 15 with the following amended paragraphs:

According to the information recognition device ~~described in claim 1~~ of the present invention, based on the detection result of the thermal radiation sensor and the behavior pattern model, plural different pieces of attribute information about the object-to-be-detected can be recognized. As a result, various types of attribute information such as the type of an object-to be-detected, etc. can be recognized. Furthermore, since the likelihood between feature data and the behavior pattern model is calculated, and predetermined information about the object-to-be-detected is recognized based on the likelihood, the predetermined information can be easily recognized.

According to the information recognition device described ~~in claim 2~~, in addition to the effects described ~~in claim 1~~ above, the recognizing process can be performed based on plural behavior pattern models depending on plural types of behavior patterns and detection results. Therefore, various types of information about objects-to-be-detected in the detection range can be recognized.

According to the information recognition device described ~~in claim 3~~, in addition to the effects ~~in claim 1 or 2~~ described above, a new behavior pattern model can be easily added, and since a behavior pattern model can be generated depending on a

given condition, flexible action can be taken in changing a behavior pattern model by changing the contents of recognition.

According to the information recognition device described ~~in claim 6~~, in addition to the effects described ~~in any of claims 1 to 3~~ above, a pyroelectric infrared sensor is used as a thermal radiation sensor. Therefore, a mobile object in a detection range can be easily detected.

According to the information recognition device ~~according to claim 7~~, in addition to the effects described ~~in any of claims 1 to 6~~ above, by modeling the behavior pattern using the HMM as a probability model of a time series signal, an unsteady time series signal can be easily modeled. Therefore, the behavior pattern of an object-to-be-detected can be appropriately modeled.

Additionally, according to the information recognition device described ~~in claim 11~~, in addition to the effects ~~described in any of claims 1 to 7~~ above, the likelihood of the behavior pattern model for the first feature data constituted by the spectrum in a frame unit of a detection result and the second feature data constituted by an average amplitude value of the spectrum in the frame unit is calculated, and plural different pieces of attribute information relating to the object-to-be-detected is recognized based on the calculation result, thereby improving the recognition accuracy of the attribute information.

According to the information recognition device described ~~in claim 12~~, since the value of the spectrum in the frame unit is transformed into the value of a common logarithm as the first feature data, the recognition accuracy of plural different pieces of attribute information can be furthermore improved depending on the condition.

Furthermore, according to the information recognition device described ~~in claim 13~~, in addition to the first and second feature data, the third feature data constituted by the difference between the feature indicated by the first feature data of a selected frame and the feature indicated by the first feature data of the frame immediately before the selected frame is used to recognize plural different pieces of attribute information. Therefore, the recognition accuracy of the attribute information can be furthermore improved.

According to the information recognition device described ~~in claim 14~~, in addition to the first to third feature data, the fourth feature data constituted by the difference between the feature indicated by the second feature data of the selected frame and the feature indicated by the second feature data of the frame immediately before the selected frame is used to recognize plural different pieces of attribute information, thereby furthermore improving the recognition accuracy of the attribute information.

According to the information recognition device described ~~in claim 15~~, in addition to the effects described ~~in any of claims 1 to 7~~ above, a detection result can be visually captured by comparing it with the feature data corresponding to the behavior patterns of other plural objects-to-be-detected, and plural different pieces of attribute information can be visually recognized.

The information recognition method described ~~in claim 16~~ is realized by the information recognition device, etc. described ~~in claim 1~~ above, and the applicability in industry overlaps between the claims. Therefore, the description is omitted here.

The information recognition program described ~~in claim 17~~ is applicable to the information recognition device described ~~in claim 1~~ above, and the applicability in industry overlaps between the claims. Therefore, the description is omitted here.

According to the security system ~~described in claim 18~~ of the present invention, based on the recognition result of the information recognition device capable of recognizing various types of information such as a complicated action pattern of an object-to-be-detected, an attribute of the object-to-be-detected, discrimination between a person and an animal, etc. can be performed. Therefore, the present system can be used for guard of a building at a lower frequency of raising an erroneous alarm by mistakenly determining the invasion of an animal, etc. other than a person into a building.